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Application No. 10/615,794
Amendment dated September 12, 2006
Reply to Office Action of July 13, 2006

Docket No.: YOR920030059US1
(20140-00302-US)

AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions, and listings, of claims in the application.

Please cancel claims 2-15 without prejudice or disclaimer.

Claims 1.-15. (Canceled).

16. (New) A method of operating a plating bath comprising:

providing a plating bath containing at least an accelerator;

plating at least one metal on a substrate;

measuring the bath concentration of at least one accelerator breakdown product ("void-formation marker, VFM");

measuring the bath concentration of said at least an accelerator;

determining a VFM ratio at each of a plurality of time-points,

wherein said VFM ratio is the concentration of said VFM divided by the concentration of said accelerator;

counting, for each of said time-points, the number of voids in the metal plated on said substrate;

determining a VFM threshold ratio as the highest VFM ratio at which no voids are observed; and

maintaining said VFM ratio below said VFM threshold ratio by performing a bleed and feed of said plating bath to maintain said VFM ratio below said threshold VFM ratio.

17. (New) The method of operating a plating bath, according to claim 16, wherein determining a concentration of said VFM comprises:

separating said VFM from said plating bath liquor; and

quantifying said VFM.

18. (New) The method of operating a plating bath, according to claim 17, wherein said VFM is separated chromatographically.

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19. (New) The method of operating a plating bath, according to claim 18, wherein said VFM is separated by liquid chromatography.

20. (New) The method of operating a plating bath, according to claim 18, wherein said VFM is separated by high performance liquid chromatography (HPLC).

21. (New) The method of operating a plating bath, according to claim 18, wherein said chromatography comprises ion-pairing, reversed-phase chromatography.

22. (New) The method of operating a plating bath, according to claim 17, wherein said quantifying is performed by instrumental analytical methods selected from the group consisting of spectroscopy and electrochemical detection.

23. (New) The method of operating a plating bath, according to claim 22, wherein said spectroscopy comprises techniques selected from the group consisting of ultraviolet, visible, infrared, and mass spectroscopy.

24. (New) The method of operating a plating bath, according to claim 17, wherein said quantitation is provided by instrumentation that provides a quantitative output in proportion to a concentration of said VFM.

25. (New) The method of operating a plating bath, according to claim 16, wherein said bleed and feed comprises adding a volume of fresh bath liquor to bring the volume above a nominal bath volume and removing said fractional volume.

26. (New) The method of operating a plating bath, according to claim 16, wherein said fractional volume is from about 1% to about 10%.